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# Early Mining and Metallurgy on the Western Central Iranian Plateau

The first three years of work

Eurasien-Abteilung  
des Deutschen Archäologischen Instituts  
Außenstelle Teheran

# Early Mining and Metallurgy on the Western Central Iranian Plateau

The first five years of work

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AND BARBARA HELWING



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# 19 Distribution of Iron Age pottery in the southern part of the Central Plateau of Iran. Report on the archaeological sites of Milājerd, Natanz

by Hamid Fahimi

## Introduction

The village Milājerd is located southeast of Natanz, close to the road from Mahābād to Murčekhord and east of the new highway from Kāšān to Esfahān (Fig. 1 and 2). Traditional subsistence in this area includes agriculture, gardening and animal husbandry. Most houses in the village Milājerd are constructed of pisé; the old part of the village is deserted today. The name of the village, "Milājerd", apparently derives from the word "Milagerd" in the Sassanian Pahlavi language.<sup>1</sup> It

can, therefore, be assumed that the village was founded during the Sassanian period.

Several archaeological sites were registered during the survey in the vicinity of the village; they are numbered Milājerd 1–5.<sup>2</sup> The site Milājerd 4, focus of this contribution, is an Iron Age cemetery that must be understood as part of a larger cultural Iron Age landscape, such as that evidenced in the survey finds recovered at Milājerd 1–3 and 5

<sup>1</sup> *Milagerd* comes from two words: 'Milad' und 'Gerd'. Milad or Milad-e Gorgin was one of the Iranian fabulous heroes and

Gerd means city or region, see Hakemi 1993, 160; Dehkhoda 1334, 19440.

<sup>2</sup> For a description of the village and the archaeological sites in the vicinity, see Chegini/Helwing, in this volume.

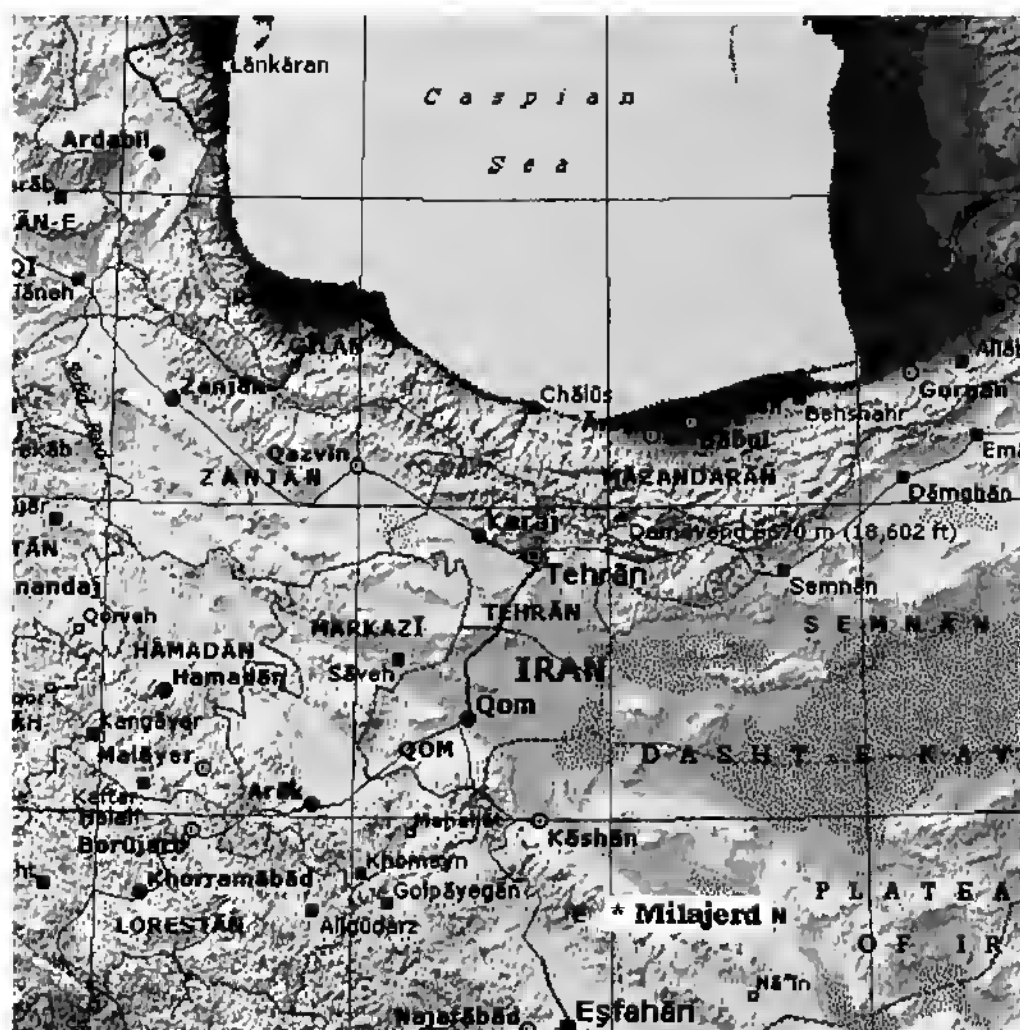


Fig. 1 General map

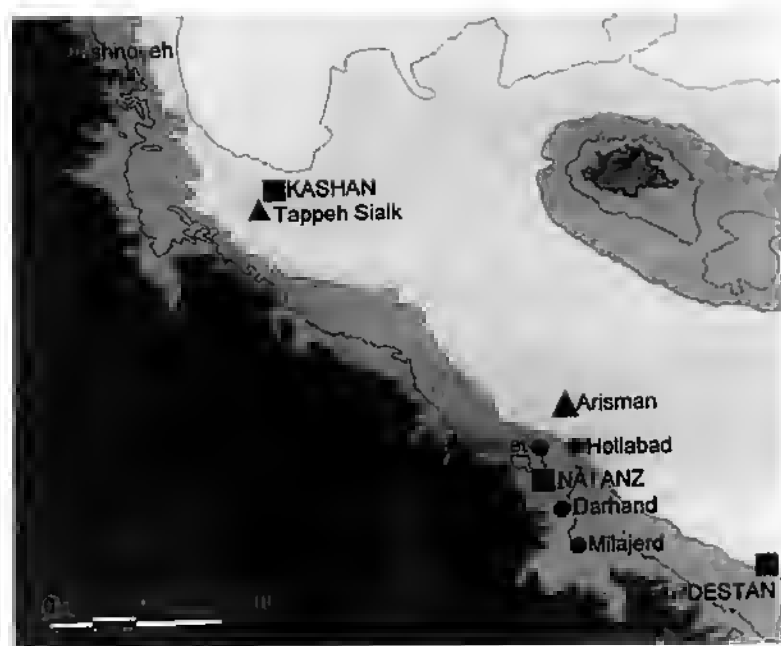


Fig. 2 Regional setting of Milājerd (Chegini et al. 2000, Fig. 1)

and that includes settlement remains and smelting places.

The site is located on a small elevated terrace at a distance of 1 km to the east of the modern village and of the small seasonal river that flows east of the village towards the northeast. It was first recognized during the construction of a gas pipeline that threatened to destroy it (Fig. 3). The tombs that had become exposed during the construction work were subsequently subjected to looting and were documented as such by the Arisman survey team. At the time of its discovery, 93 looted tombs were documented (Fig. 4). The shape of the tombs had been greatly altered during illegal excavations; hence, their appearance and state today do not allow a reconstruction of their original shape and layout. It seems, however, that they had no elaborate shape, but were rather irregular pits dug into the ground; no remains of any construction material were observed.

In most of the remaining pits the rests of the grave inventories were preserved, and dark gray burnished pottery fragments were found in the spoil heaps from the illegal excavations as well. The survey team collected pottery separately according to the grave pits or spoil heaps in which they were found. Although this material consists of broken pottery fragments, it provides a large spectrum of fabric and form groups.

On the basis of this pottery collection, and the collection of more pottery from the nearby slag heaps at Milājerd 3, the preliminary survey report dated the site to the end of the Iron Age (Iron Age III).<sup>3</sup>

<sup>3</sup> See Chegini/Helwing, in this volume.

According to the survey report and the testimony provided by the local population, the Natanz police confiscated a group of archaeological objects and arrested the looters in November 2002. During the 2004 fall season of the joint Iranian-German excavations at Arisman, I headed the Iranian team and, thus, had the opportunity to visit the site of Milājerd and to study both the survey pottery collection and a group of vessels that had been confiscated by the Natanz police.

The pottery confiscated from the Milājerd 4 illegal excavations consists altogether of 61 complete vessels and four flasks. An additional 114 pottery fragments, most of them body sherds, were collected. This particular group has a much more narrow range of shapes and fabrics than the pottery collected during the general surface survey. Therefore, the two groups are discussed separately in this report.

#### Pottery collected during the 2002 survey season at Milājerd 4

The pottery, altogether 152 fragments, can be distinguished into seven ware groups on the basis of color and clay.

1. Dark gray ware (GLE 10YR4/1)<sup>4</sup>, with sandy clay and mica, well fired (19 body sherds, 7 bases, 2 fragments preserved from rim to base, 3 handles, 1 foot, 1 lid). The slip on the inner surface derives from wet smoothing, the outside is polished, and some fragments are at least burnished. Most vessels are wheel-thrown. Two rim fragments of this group are incised.
2. Medium gray ware (1.6/10Y) with black grit and limestone temper, badly fired and rather soft (44 body sherds, 12 rim fragments, 8 bases, 3 fragments preserved from rim to base). Most bear a slip inside and outside; most are wheel-made.
3. Light red ware (matrix 10R4/6, surface 10R6/4) made of sandy clay with red and black grit, limestone and mica temper, badly fired and rather soft (9 body sherds, 6 rim fragments, 1 base, 2 fragments from rim to base). Most are handmade, and most bear a buff slip (7.5YR8/2) inside and outside.
4. Buff ware with a coarse temper of black and red grit and/or limestone, well fired (3 body sherds, 1 rim). Handmade, the inside and outside are wet-smoothed.

<sup>4</sup> The color of all pottery finds was determined with the use of the Munsell Color Charts.

5. Light red ware (10R4/6) with red and black grit temper (6 body shreds, 1 rim). Outside wet-smoothed, one fragment with dark red slip.

6. Light red ware (10R6/8) with fine grit, limestone and mica as well as chaff temper, badly fired and very soft. Some fragments have finger impressions, and in one case an incised line. Thin layer of slip or wash, applied with a wet hand, color almost brown (5YR4/2).

7. Buff ware (10R7/4) made of sandy clay with coarsely crushed stone temper (2 body sherds). Surface wet-smoothed, one fragment decorated with two incised lines.

### Finds from the illegal excavations at Milājerd 4, confiscated by the Natanz police

#### Pottery wares

The wares represented by the Police Sample are Dark Gray Wares (1–2 in the survey material) and Light Red Wares (3, 5–6); some of the Gray Ware was handmade. Buff ware (4; 7) such as that also collected during the survey is only present within the broken pottery fragments. The assemblage is dominated by Gray Ware, and 50 vessels out of the 61 specimen found were of Gray Ware; only eleven were of light red ware. Among the fragments, 97 are Gray Ware, 12 are Light Red Ware, and two are Buff ware. This shows the importance of the gray ware in the Milājerd assemblage.

The pottery is generally mineral tempered with sand, mica and grit. Some examples of the Light Red Ware have additional small black and dark red stones in it. Similar temper material is also found in

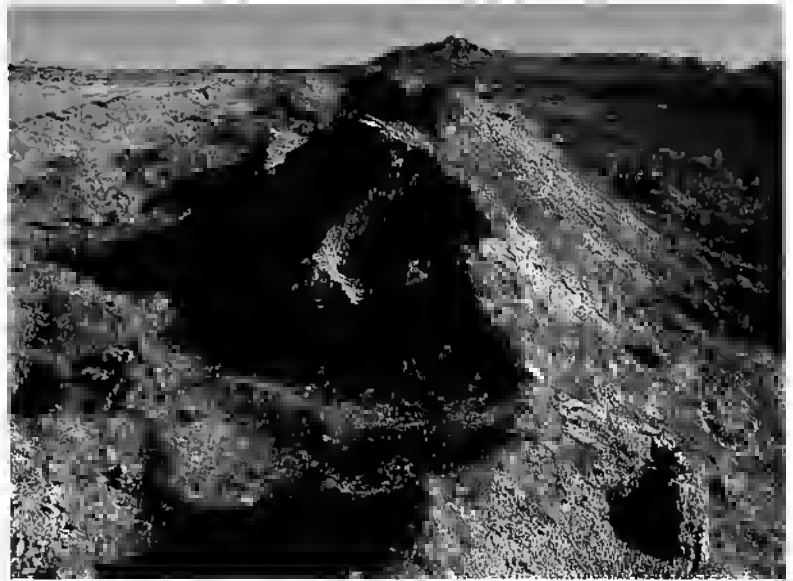


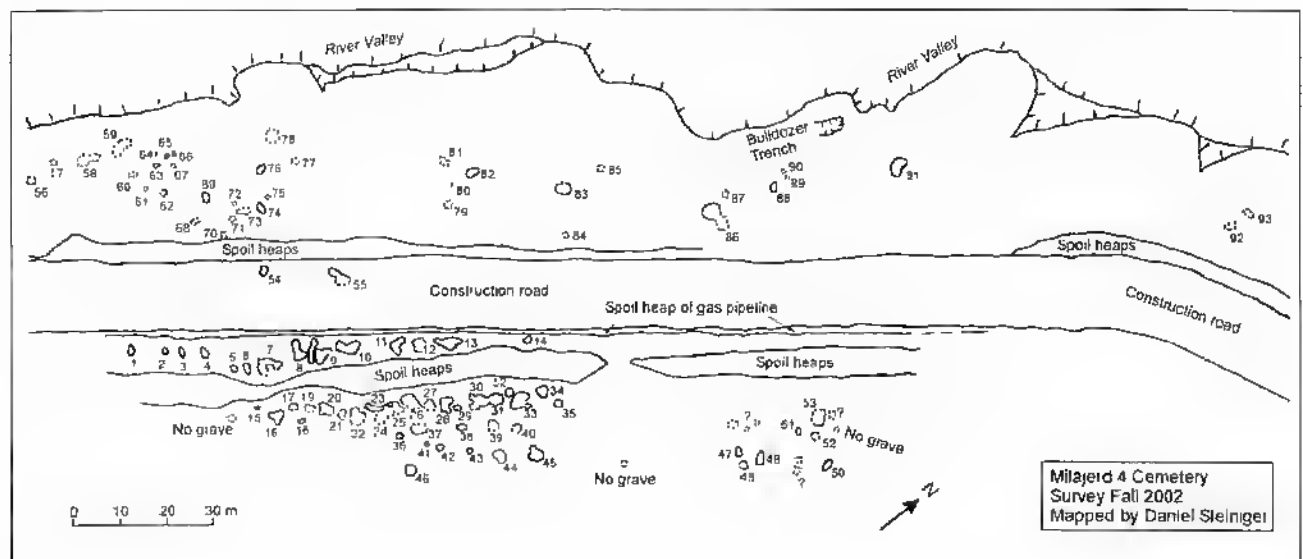
Fig. 3 Milājerd 4. View of looted grave pits along both sides of the heaped dirt from pipeline construction

the assemblages from the new excavations on the South Mound at Siak.<sup>5</sup> The Gray Ware sherds of this group have no slip and are only wet-smoothed; they show no burnishing traces. Although many of the shapes can be compared to other Iron Age assemblages, the details of production seem to indicate that most of the Milājerd 4 assemblage represents a local pottery production.

#### Pottery forms

Due to the preservation and collection of mostly complete pottery vessels, the vessel group confiscated by the police provides a good overview of

Fig. 4 Milājerd 4. Plan of the graveyard



<sup>5</sup> Fahimi 2004, 2006; Helwing 2006.



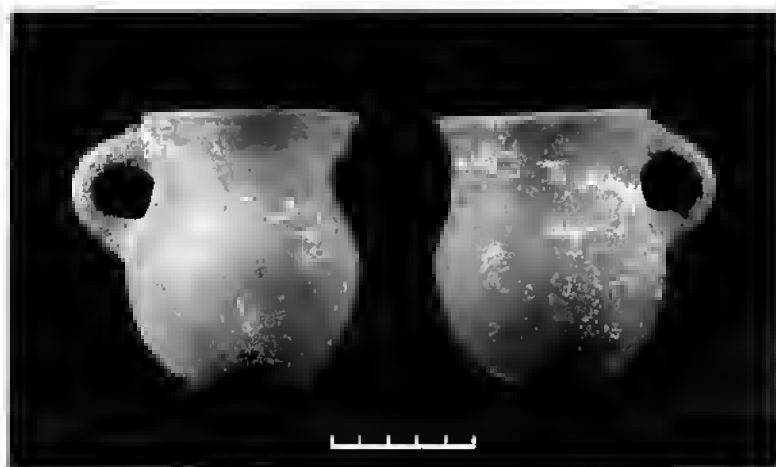


Fig. 5 Milājerd 4. Small closed vessels/juglets (Cat. 18–19)



Fig. 6 Milājerd 4. Small closed vessels/juglets and stemmed cup with handle (Cat. 9, 8, 13)



Fig. 7 Milājerd 4. Open bowl with knobs (Cat. 52)

the range of vessel shapes represented in the Milājerd 4 cemetery.

The vessels can be divided into seven form groups that can be further subdivided into sub-groups:

1. Small closed vessels (cp. Fig. 5–6; 20–21) with everted rim
  - a. With handle (juglets) (Fig. 20, 1–7)
  - b. Without handle / jais (Fig. 21, 14–15)
  - c. of somewhat larger size (Fig. 22, 23–25)

Small juglets with round handles and flat base occur frequently, mostly in gray ware, only rarely in red or buff ware.

2. Small cups with handle (Fig. 20)
  - a. With flat base (Fig. 20, 11)
  - b. With ring base (Fig. 20, 10)
  - c. With high-stemmed base (Fig. 6, 13; 20, 13)

3. Open bowls (Fig. 7; 24–25; 26)
  - a. With vertical rim (Fig. 7; 24–25; 26, 50–52)
  - b. With handle and spout (Fig. 11; 22, 26)

4. Beakers (Fig. 8; 27, 56–58)

5. Flat bowls or dishes (Fig. 9; 10; 26)
  - a. With flat base (Fig. 9; 26, 53)
  - b. With three legs (Fig. 10; 26, 55)

6. Spouted jais (Fig. 12; 27, 59)
7. Small flasks (Fig. 13; 28, 61–62)

The four small flacons are made of Gray Ware, have a rectangular form and stand upon four small feet. The body displays incised geometric designs filled with white lime paste. One example displays three horizontal ladder-lines (Fig. 13, left), the three others have a cross on each side, either diagonal or vertical, with a dot at the central crossing (Fig. 13, right).

## Handles

Of the 61 vessels confiscated at Milājerd 4, 31 have a handle. Thirty of these handles stand vertically, only one is horizontal. Horizontal handles are one of the characteristics of Iron Age III, so that the singular piece from Milājerd may represent the beginning of that tradition. Such horizontal handles are usually attached directly to the rim, but the example from Milājerd is attached to the body of the vessel.

## Decoration

Most pottery from Milājerd is undecorated, except for pottery vessels with red geometrical motifs painted on a cream colored surface (Fig. 14; 23, 32). Of the remainder, the decoration is mostly incised with geometric motifs and, as is the case with the small flacons, these incisions can be encrusted with white paste. The singular spouted

vessel from Milājeid 4 has a painted geometric decoration in dark red. This vessel must be the latest example in the group.

### Pottery marks

Another important aspect of Milājeid 4 Gray Ware pottery is the observation that some vessels bear marks in the shape of incised signs, either on the body or below the base of the vessel. One symbol that occurs more often than all others in Milājeid is a straight vertical line with two to three slightly curved lines that cross at ca. 90° angle (Fig. 15,a). This simple sign may resemble a standing human being or animal, but its real meaning is lost to us. The other signs comprise two straight lines that cross at right angles, or X-shape (Fig. 15,b), a combination of vertical and horizontal lines in a grid- or checkerboard pattern (Fig. 15,c), lines in the shape of a fork (Fig. 15,d), and open concentric circles, with either two (Fig. 15,e) or more open circles (Fig. 15,f). Until now, such signs have not been reported at any other Iron Age site.

Unfortunately, the meaning of these symbols cannot be deciphered. One possibility is that they could be potters' marks; other possibilities are marks that denote the individual vessel's contents or that have a spiritual meaning. The tradition of marks and signatures on works of art has a long tradition. For example, the craftsmen who crafted the gold and silver objects found at the Mālik cemetery signed their works below the base with signs. Thus, in the opinion of the excavator these show the signatures of the artists or the workshops.<sup>6</sup>

### Metal objects

The group confiscated by the police also includes 19 bronze objects and one piece of lead. Two objects are tanged blades, one probably a spear-head (Fig. 19, left; 29,63). The second blade is severely damaged; it could be a knife (Fig. 19, center; 29,62). Two objects are pins with a thick shaft that is perforated and bear geometric decoration on the upper part. One pin has a flat end; the lower shaft is missing (Fig. 20, upper left; 29,65). The second pin is complete and displays a rather flattened semi-spherical head (Fig. 20, below; 29,64). Further jewelry includes an open bronze armband with round section and blunt ends (Fig. 21, left; 29,69). Two small ring fragments have a flattened and broadened end, so that they form a leaf-shape; they are possibly from earrings or the like (Fig. 21, upper right; 29,66–67). Noteworthy is the disc with fine openwork that resembles a spoked wheel; it may have been an appli-

<sup>6</sup> Negahban 1996, 74.



Fig. 8 Milājeid 4. Beakers (Cat. 56–58)

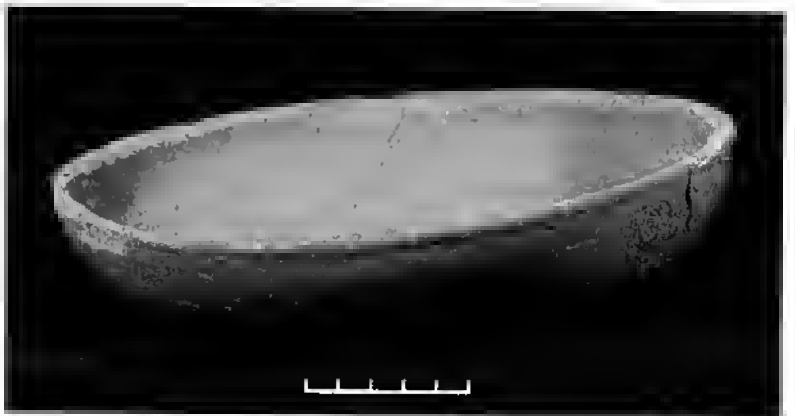


Fig. 9 Milājeid 4. Flat dish (Cat. 53)



Fig. 10 Milājeid 4. Flat dish with three feet (Cat. 55)

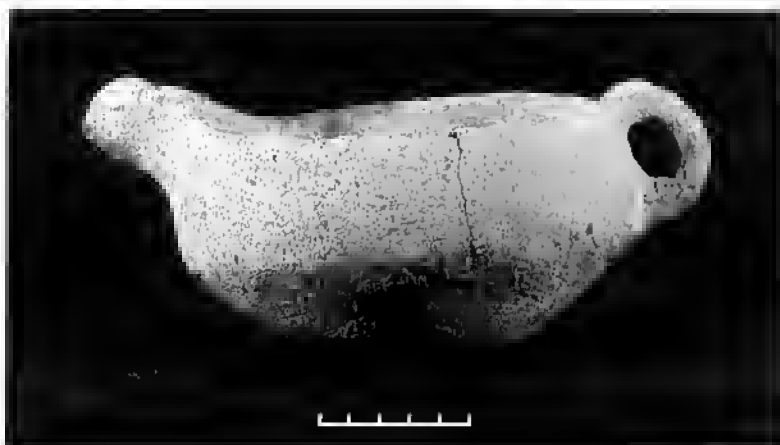


Fig. 11 Milajer 4. Spouted bowl (Cat. 26)

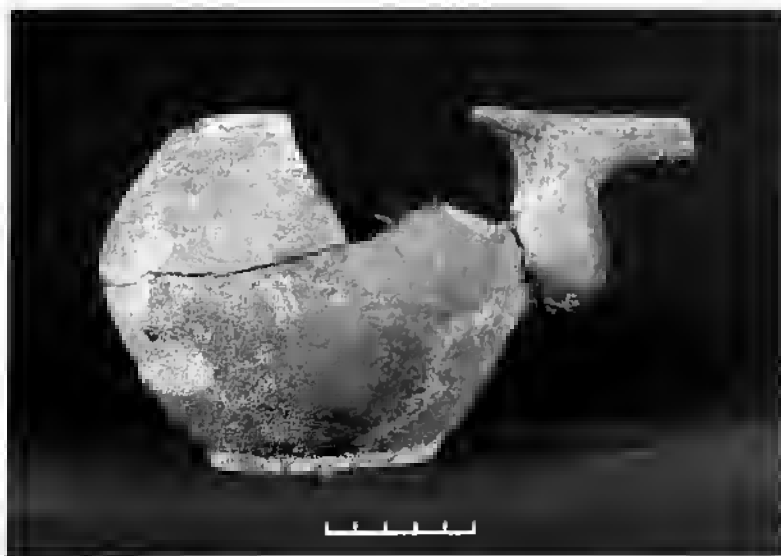


Fig. 12 Milajer 4. Spouted jar (Cat. 59)



Fig. 13 Milajer 4. Small flasks with four small feet and incised decoration (Cat. 60–61)

cation on a garment (Fig. 21, lower right; 29,68). Sickie blades were also found, one severely corroded example (Fig. 20, upper right) and one well-preserved with a curved tang (Fig. 22; 29,70). Noteworthy is the fragment of a lead bar (Fig. 19, right).

### Comparison of the Milajer 4 material with other Iron Age sites in Iran

According to the ware represented, there are seven types of ware in the Milajer pottery that can all be compared with pottery from cemetery A in Sialk and the graveyards at Qeytariyeh, Khorvin and Sarm.

This comparison is also possible in view of the form. The most distinct comparison is form 1. Shapes comparable to the small juglets with round handles and flat base (cp. Fig. 5–6, 20–21) have been documented in cemetery A in Tappe Sialk,<sup>7</sup> Khorvin<sup>8</sup> and in the Qeytariyeh graveyard,<sup>9</sup> where they tend to be associated with large spouted jars.

Small cups with a handle and a rounded base, a flat base or a high stem, form 2 (Fig. 6, 13 and 20, 10, 11, 13) are comparable with the material from cemetery A in Tappe Sialk<sup>10</sup>, Khorvin<sup>11</sup> and Sarm<sup>12</sup> cemetery.

The open bowl, form 3, with handle and uncovered spout (Fig. 11; 22, 26) can be compared with similar bowls found in Khorvin<sup>13</sup> and Märlik.<sup>14</sup> Other comparable examples in Milajer 4 are the conical wide-mouthed bowls of form 3a, occasionally with three small knobs under the rim (Fig. 7; 26, 52). Similar bowls occur in cemetery A in Sialk,<sup>15</sup> Khorvin<sup>16</sup> and in layers assigned to the period A level 2–3 in Tappe Qoli Darvis.<sup>17</sup>

Form 4, the handled beakers with ring base or stemmed base and with a high neck (Fig. 8; 27, 56–58) can be compared with examples from Qeytariyeh,<sup>18</sup> Khorvin<sup>19</sup> and Hasanlu V.<sup>20</sup>

Form 5, flat bowls or dishes with flattish base (Fig. 12; 29, 53) or those with three legs (Fig. 13; 29, 55) can be compared with material from Qey-

<sup>7</sup> Ghoshman 1939, pl. 12, S. 998h.

<sup>8</sup> Vanden Brighé 1964, pl. 12.

<sup>9</sup> Kambakhsh Fard 1370 (1991), 85 fig. 36.

<sup>10</sup> Ghoshman 1939, pl. 20, S.

<sup>11</sup> Vanden Brighé 1964, pl. 6, 33.

<sup>12</sup> Sarlak/Aghili 2005 (1384).

<sup>13</sup> Vanden Brighé 1964, pl. 6, 33, 35.

<sup>14</sup> Negidban 1996, fig. 28, 614 and 607 (without handle).

<sup>15</sup> Ghoshman 1939, pl. 3.

<sup>16</sup> Vanden Brighé 1964, pl. 22, 183.

<sup>17</sup> Sarlak/Aghili 2005 (1384).

<sup>18</sup> Kambakhsh Fard 1370 (1991), 80.

<sup>19</sup> Vanden Brighé 1964, pl. 14.

<sup>20</sup> Dyson 1967, 641.

tariyeh<sup>21</sup>, Khorvin<sup>22</sup> and also cemetery A in Tappe Sialk.<sup>23</sup>

Form 6, the spouted jar (Fig. 12; 27,59) in Milājerd 4 can be compared with similar shapes in Qeytariyeh,<sup>24</sup> Concerning the spouted jar from Milājerd 4, comparisons can be found as far as Märlik<sup>25</sup> and Kaluraz.<sup>26</sup>

Form 7, flacons with incised decoration and mostly of gray ware (Fig. 13; 28,60–61), are comparable with forms in Khorvin<sup>27</sup> and in cemetery A in Sialk;<sup>28</sup> they have also been found in Tappe Qoli Darviš.<sup>29</sup>

The few examples of decorated pottery found in Milājerd 4 (Fig. 14; 23,32) can be compared to cemetery A in Sialk<sup>30</sup> and to the pottery from Šamširgāh.<sup>31</sup> The miniature perfume flasks with excised geometric pattern can be compared with material from cemetery A and also cemetery B in Sialk<sup>32</sup> and with Tappe Qoli Darviš.<sup>33</sup>

Metal objects from Milājerd 4, for example, the aforementioned ring fragments of flattened lanceolate form (Fig. 18), can be compared with material from cemetery A in Sialk,<sup>34</sup> from tombs in Tappe Gurān (period II),<sup>35</sup> from Hasanlu<sup>36</sup> and from the Bronze Age graveyard at Bani Suimā in Lorestān.<sup>37</sup> The bronze leaf-shaped tanged blade (Fig. 16) can be compared with similar blades in Märlik<sup>38</sup> and Qeytariyeh.<sup>39</sup>

The disc with openwork (Fig. 18, lower right) as well as the massive open arming (Fig. 18 left)

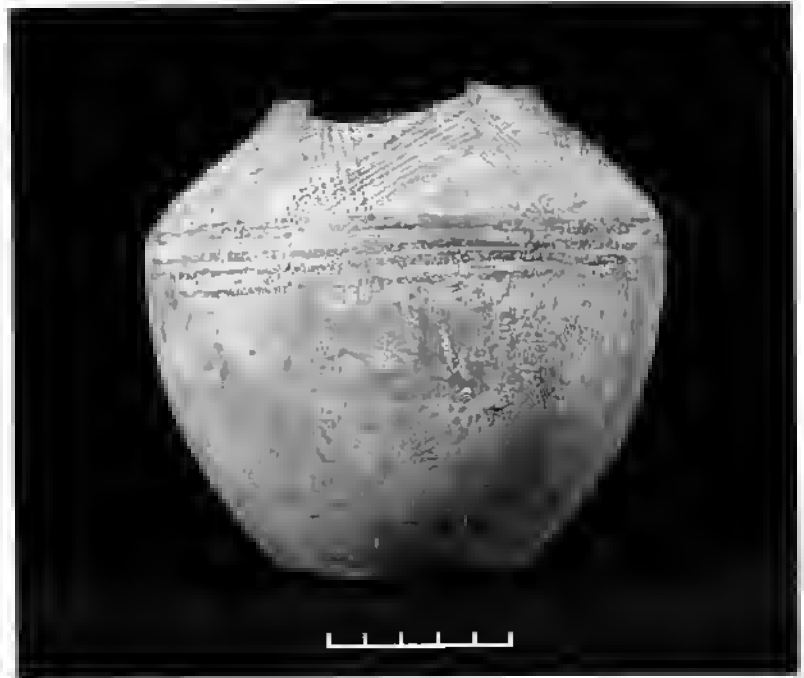


Fig. 14 Milājerd 4. Vessel with painted geometric decoration (Cat. 32)

have parallels in the material from the Märlik cemetery<sup>40</sup> and cemetery A at Tappe Sialk.<sup>41</sup> The open arming is also similar to armings known from cemetery A at Sialk<sup>42</sup>, Hasanlu<sup>43</sup> and Khorvin.<sup>44</sup> Further, the sickle blade with curved tang (Fig. 19) can be compared with sickles found in cemetery B in Sialk;<sup>45</sup> another one made from iron has been found in Šamširgāh.<sup>46</sup>

The pins with perforated thick shaft and geometric decoration on the upper part of shaft from Milājerd 4 (Fig. 17) can be also compared with similar material found from cemetery A at Sialk<sup>47</sup>, Khorvin<sup>48</sup> and the Märlik cemetery.<sup>49</sup>

<sup>21</sup> Kambakhsh-Fard 1370 (1991).

<sup>22</sup> Vanden Berghe 1964.

<sup>23</sup> Ghirshman 1939, pl. 3,5.

<sup>24</sup> Kambakhsh-Fard 1370 (1991), 84.

<sup>25</sup> Negahban 1996, pl. 110,576.

<sup>26</sup> Khalafbari 1376, 120.

<sup>27</sup> Vanden Berghe 1964, pl. 28,209–212.

<sup>28</sup> Ghirshman 1939, pl. 4.

<sup>29</sup> Sarlak 2004, fig. 56.

<sup>30</sup> Ghirshman 1939, pl. 1.

<sup>31</sup> Kleiss 1983; Fahimi 2003–2004.

<sup>32</sup> Ghirshman 1939, pl. 38,5. 432; pl. 20,9.

<sup>33</sup> Sarlak, unpublished.

<sup>34</sup> Ghirshman 1939, pl. 38,5. 432a.

<sup>35</sup> Thrane et al. 2001 pl. 66,26; 69,4.

<sup>36</sup> Hakemi/Rad 1329 (1950), pl. 45,1.

<sup>37</sup> Haerinck/Overlaet 2005 pl. 43, A14–59.

<sup>38</sup> Negahban 1996, pl. 123,778.

<sup>39</sup> Kambakhsh Fard 1370 (1991), fig. 118,13.

<sup>40</sup> Negahban 1996, fig. 16,356; fig. 15,193.

<sup>41</sup> Ghirshman 1939, pl. 5,7.

<sup>42</sup> Ghirshman 1939 pl. 40,5. 461a.

<sup>43</sup> Hakemi/Rad 1329 (1950), pl. 37,1.

<sup>44</sup> Vanden Berghe 1964, pl. 41,293.

<sup>45</sup> Ghirshman 1939 pl. 71,5. 891a.

<sup>46</sup> Azarnoush/Helwing 2005, 228 Fig. 6; Fahimi unpubl.

<sup>47</sup> Ghirshman 1939, pl. 42.

<sup>48</sup> Vanden Berghe 1964, pl. 43,306.

<sup>49</sup> Negahban 1996, fig. 33,854.

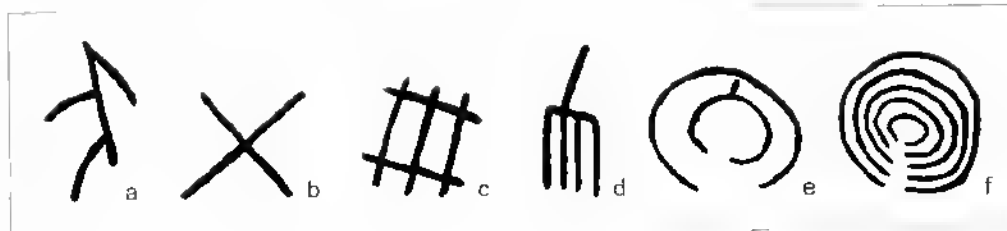


Fig. 15 Milājerd 4. Incised pottery marks



Fig. 16 Milajer 4. Metal objects: (left to right) tanged leaf-shaped blade (Cat. 63); tanged blade with damaged edges (Cat. 62); fragment of lead bar (Cat. 72)



Fig. 17 Milajer 4. Metal objects: fragment of pin with decorated head (upper left, Cat. 65); fragment of sickle (upper right, Cat. 71); pin with decorated head (below, Cat. 64)

### Dating Milajer 4

The preceding discussion shows very clearly that although it cannot be considered a homogeneous assemblage, the Milajer collection can be characterized as predominantly gray ware, whereby the specific dark gray pottery with slip inside and outside is more frequent than the light gray ware. Hence, the largest part of the material can best be compared with Tappe Sialk, cemetery A, which respectively defines period Sialk V, and with materi-

al from stratified layers in Tappe Qoli Darvish, associated with grave goods from the Iron Age graveyards at Qeytlariyeh, Šamširgah, Sarm and Ma'mourin. The Milajer 4 material can be added to this group of sites. The similarity of Milajer 4 with sites farther north, especially in the Tehrān Plain, indicates a strong correlation between Milajer and that area.

### Local specifications

However, while the general forms are comparable with reference collections from major Iron Age II sites in Central Iran, there are also elements in most pottery examples that must be considered local on the basis of their surface treatment and their fabric, their temper, and also from the symbols incised on the vessels at Milajer. All of these elements can be compared with material found at other Iron Age sites, which has been shown in the description of the forms.

One of the incised symbols resembles a seal from cemetery A in Sialk.<sup>50</sup> These local aspects are important in so far as they indicate the existence of local varieties.

One remaining problem in relating Milajer 4 and Sialk is presented by the distance of about 80 km between the two sites: Namely, no archaeological survey has been carried out so far in that area. It seems, however, that the region is rich in archaeological remains. Sites have occasionally been found during geological surveys or accidentally during construction work. H. Talā'i from the University of Tehrān has conducted some surface collections of Iron Age material in the area between Kāšān and Natanz, but in the end we still lack systematically collected data on the Iron Age landscape in this region.

### Milajer in a wider context

#### Dating of the Central Plateau sites

Unfortunately, the sites on the Central Iranian Plateau that yielded the best comparable material to the Milajer 4 cemetery still do not provide a secure chronology.<sup>51</sup> Tappe Sialk with its huge mud-brick platform is certainly one of the most important Iron Age sites on the Central Plateau and one of the key sites of the Iron Age chronology in the area. It, therefore, also serves as the major reference point for the study of the Milajer assemblage that can be correlated with Sialk V and cemetery A. Conventionally, this correlates to

<sup>50</sup> Ghirshman 1939, pl. 96.5, 1776.

<sup>51</sup> For a discussion of the early phases of the Iron Age in Central Iran, compare Kambakhsh-Fard 1370 (1991); Tourovelz 1989; Mousavi 2001; Pillay 2004b.

Iron Age II, respectively the last two centuries of the second millennium BC, according to comparisons of the Central Iranian sites to the longest stratified sequence from northwestern Iran, from Hasanlu.<sup>52</sup> The excavator of Qeytariyeh dates the graveyard of Qeytariyeh to the 12<sup>th</sup>–11<sup>th</sup> century BC on the same basis.<sup>53</sup> However, the chronological position of even the key site Sialk is still not sufficiently known. For example, R. Ghirshman dated the graveyards A and B at Sialk to Iron Age I and II,<sup>54</sup> but also discussed the possibility of assigning the Sialk A cemetery to the Late Bronze Age.<sup>55</sup> Cuyler Young followed Ghirshman's argument and stated that cemetery B at Sialk should be assigned to the Iron Age II.<sup>56</sup> Dyson, however, was convinced that cemetery B at Sialk dates to Iron Age III.<sup>57</sup>

In order to date Sialk VI, in particular the beginning of that period, Ghirshman relied upon comparisons with material excavated by the Russian Expedition to Turkmenistan, north of the Atrak

<sup>52</sup> During the past decades of archaeological research, many divergent opinions concerning the Iron Age chronology have been voiced. According to the work of R. Dyson (1965b; reviewed proposal on the basis of absolute dates for the Hasanlu sequence in Dyson/Muscarella 1989), Cuyler Young (1965) and Vanden Beighe (1966), the Iron Age begins around the middle of the 2<sup>nd</sup> millennium BC.

The classification of Iron Age pottery proposed by Cuyler Young (1965; revised 1985) is thus far the most useful one for the study of the Iron Age in Iran. He has assembled inventories that are representative for the various subperiods of the Iron Age. Absolute dates could be assigned to these key inventories on the basis of stratified radiocarbon samples from Hasanlu, which is one of the key sites for understanding Iron Age chronology in Iran (Hasanlu V: Iron Age I, 1450–1200 BC; Hasanlu IV: Iron Age II, 1200–800 BC; Hasanlu III: Iron Age III, 800–550 BC). As a matter of fact, this scheme is valid for Hasanlu and for other sites in northwestern Iran that share larger or smaller parts of the material culture assemblage with Hasanlu. However, this scheme cannot be easily transferred to other parts of Iran.

The chronological sequence proposed on the basis of the Hasanlu sequence cannot be easily applied to other areas in Iran. It is also important to note that this chronological system has not found full acceptance everywhere, since it is not very compatible with systems in neighboring regions (cp. for example, Dillmann 1990). German scholars working in Azarbaijan and other places have therefore always followed a different scheme (cp. Azarbaijan/Helwing 2005, 232; footnote 197).

Most important in this regard is the result of the re-analysis of Hasanlu period V and VI (M. Danli, pers. comm.). According to this new research on the later Bronze Age (Hasanlu VI) and the earliest so-called Iron Age (Hasanlu V), the original interpretation of a break in the occupation of the site between these periods is sustained.

Hasanlu V exhibits close ties to the succeeding Hasanlu IV, the so-called Iron II, and has traditionally been viewed as marking the arrival of a new population in northwestern Iran (Danli 2008, 23). Before the re-analysis is concluded and the results published, any conclusion based upon the Hasanlu sequence should be regarded as preliminary and with caution.

<sup>53</sup> Kambakhsh-Fard 1370, 48.

<sup>54</sup> Ghirshman 1939, 21.

<sup>55</sup> Ghirshman 1939, 20.

<sup>56</sup> Cuyler Young 1985.

<sup>57</sup> Dyson 1965b, 200.

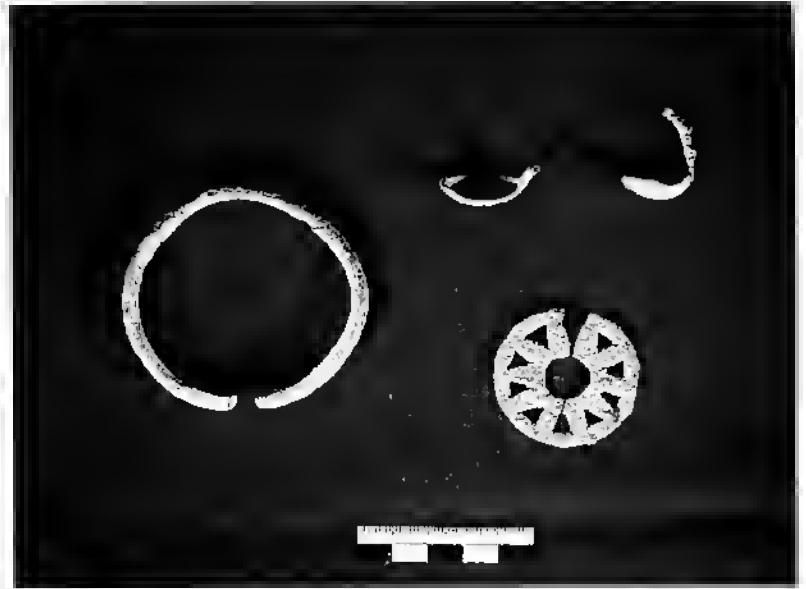


Fig. 18 Milājerd 4. Metal objects: open armring (Cat. 69), two fragments of earrings with leaf-shaped end (Cat. 66–67); disc with openwork (Cat. 68)



Fig. 19 Milājerd 4. Tanged sickle (Cat. 70)

River, in the area southeast of the Caspian Sea. Ghirshman saw the similarities between these materials and upon this basis suggested that the Sialk VI culture (resp. the Iranian Iron Age III) arrived on the Central Plateau via the northeast of Iran, that is, the Gorgān Plain and the Alborz Mountains and then through the area of present-day Tehrān and ultimately Sialk.

A new definition of phase VI is possible on the basis of the new excavations at Tappe Sialk. In particular, Ghirshman's report on the excavation in cemetery B and the South Mound did not mention

S-carinated rim bowls, that are now well established chronological markers, but they are attested in new excavations. Phase Sialk VI as found in Sialk proper and in cemetery B, with its red-on-buff ware in association with S-carinated rim bowls, must therefore belong to the very end of the Iron Age, since S-carinated rim bowls do not occur before 700–600 BC.

If Sialk VI can be assigned to the Iron Age III, we can then work our way back in time. Again on the basis of the recent excavations on the South Mound in Sialk, there seems to be no gap between the archaeological layers representing Sialk V and Sialk VI. Furthermore, there is a significant similarity between the shapes of the Sialk V red and buff ware with those of the Sialk VI pottery, and there is a strong similarity of the gray ware from Sialk V and Sialk VI as well. These features seem to indicate that there was never a gap between Sialk V and VI and that the relationship between the two chronological phases is a continuous one; that is to say: Sialk V is the immediate predecessor of Sialk VI. If, then, Sialk VI is assigned to Iron Age III, Sialk V as well as Milājerd 4 must represent the immediately preceding period, that is, Iron Age II, dating to the very end of the 2<sup>nd</sup> millennium BC.

### External relations of the Milājerd and Sialk V assemblages

Outside of the Tehrān Plain, it is interesting to note that individual types even go beyond the Alborz Mountains and appear in a wider area to the north. For example, comparisons for the spouted

jar from Milājerd 4 are found as far as Mārlīk<sup>58</sup> and Kaluraz.<sup>59</sup>

Relations of the Milājerd 4 material with north-western Iran are likewise recognizable. Small, handled cups (Cat. no. 1 and 2) are also found in the cemeteries under the Blue Mosque in Tabriz,<sup>60</sup> Dinkhā II<sup>61</sup> and Haftvān IV.<sup>62</sup> The Hasanlu V assemblage, so far the only stratified material dated on the basis of radiocarbon samples, comprises what can be compared with Milājerd 4. This shows that the relations of the Milājerd material extend beyond the limits of the Central Plateau of Iran. Again, the assemblages from northwestern Iran can be linked with Qeytāīyeh<sup>63</sup> and with the cemetery of Jamshīdābād in Gilān.<sup>64</sup>

### Conclusions about the dating

All comparisons, thus, fall within the range of Iron Age II forms, but not earlier. Solely Hasanlu V, which has been compared to Milājerd 4, is assigned to the end of Iron Age I. The Milājerd material, therefore, must be assigned to Iron Age II.<sup>65</sup>

<sup>58</sup> Negahban 1996, pl. 110, 576.

<sup>59</sup> Khalatbari 1376, 120.

<sup>60</sup> Hojabri Nobari 2005 (1384), 38 pl. 5.

<sup>61</sup> Muscarella 1974.

<sup>62</sup> Burney 1970.

<sup>63</sup> Kambakhsh-Fard 1370 (1991).

<sup>64</sup> Falahiyan 2003.

<sup>65</sup> I thank my colleague Barbara Helwing, head of the German team and my co-director during the fourth excavation season at Arismān, for her help and advice regarding this study.

## Catalogue of finds

No.	Fig.	Description	Clay and temper	Inner surface treatment and color <sup>1</sup>	Outer surface treatment and color <sup>1</sup>	Vessel mounting method; hardness
1	20,1	Small closed vessel with handle and flat base	Grit, sand and limestone	Wet smoothed 2.5Y5/1	Wet smoothed 2.5Y5/1	Handmade
2	20,2	Small closed vessel with handle and flat base	Grit, sand, limestone and mica	Polished and wet smoothed 2.5Y4/1	Polished and wet smoothed 2.5Y4/1	Handmade (?); rather soft
3	20,3	Small closed vessel with handle and flat base	Grit, limestone and mica	Wet smoothed 2.5Y4/1	Polished and wet smoothed 2.5Y4/1	Handmade (?); rather soft
4	20,4	Small closed vessel with handle and ring base	Grit and limestone	Wet smoothed 2.5Y4/1	Polished and wet smoothed 2.5Y4/1	Wheel-made; rather soft
5	20,5	Small closed vessel with handle and ring base	Sandy clay and mica	Polished 2.5YR4/1	Polished and burnished 2.5YR4/1	Wheel-made; rather soft
6	20,6	Small closed vessel with handle and flat base	Sand, limestone and mica	Wet smoothed 2.5Y5/1	Wet smoothed 2.5Y5/1	Handmade (?); rather soft
7	20,7	Small closed vessel with flat base	Sandy clay and mica	Wet smoothed 2.5Y5/1	Wet smoothed 2.5Y5/1	Wheel-made; rather soft
8	6,8; 20,8	Small closed vessel with flat base and horizontal handle with hole from inner wall	Grit, sand, limestone and mica	Wet smoothed 2.5Y5/1	Wet smoothed 2.5Y5/1	Handmade; rather soft
9	6,9; 20,9	Small closed vessel with handle and flat base	Sand, limestone and mica	Wet smoothed 2.5Y5/1	Wet smoothed 2.5Y5/1	Wheel-made; well fired
10	20,10	Small cup with handle and ring base	Sandy clay and mica	Polished and wet smoothed 2.5Y4/1	Polished and wet smoothed 2.5Y4/1	Wheel-made; well fired
11	20,11	Small cup with handle and flat base	Black-red and white grit and sand	No slip	No slip	Handmade; rather soft
12	20,12	Small closed vessel with handle and flat base	Sand, limestone and mica	Wet smoothed 2.5Y4/1	Wet smoothed 2.5Y4/1	Handmade; rather soft
13	6,13; 20,13	Small cup with handle and high-stemmed base	Sand and limestone	Wet smoothed 2.5Y8/1	Wet smoothed 2.5Y8/1	Handmade; badly fired and rather soft
14	21,14	Small closed vessel with flat base and incised geometric motif	Grit, sand and mica	Wet smoothed 10YR7/3 (buff)	Wet smoothed 10YR7/3 (buff)	Handmade; rather soft
15	21,15	Small closed vessel with everted rim	Grit, sand, limestone, mica and chaff	Wet smoothed 2.5Y8/3 (white)	Wet smoothed 2.5Y8/3 (white)	Handmade; well fired

<sup>1</sup> Color was determined according to Munsell Color Chart



No.	Fig.	Description	Clay and temper	Inner surface treatment and color <sup>1</sup>	Outer surface treatment and color <sup>1</sup>	Vessel mounting method; hardness
16	21,16	Small closed vessel with everted rim and handle	Black grit, sandy clay, limestone and mica	Wet smoothed	Wet smoothed	Handmade; well fired
17	21,17	Small closed vessel with everted rim and handle	Grit and sandy clay	Wet smoothed	Wet smoothed, polished and burnished	Handmade (?); rather soft
18	5,18; 21,18	Small closed vessel with everted rim and handle	Black grit, sandy clay and mica	Wet smoothed, polished and burnished	Wet smoothed, polished and burnished	Wheel-made; well fired
19	5,19; 21,19	Small closed vessel with everted rim and handle	Grit, sandy clay and mica	Polished	Polished and burnished	Handmade (?); well fired
20	21,20	Small closed vessel with everted rim and handle	Black and red grit, limestone, sand and mica	Red slip (wet smoothed) 7.5R5/8	Red slip (wet smoothed) 7.5R5/8	Wheel-made; well fired
21	21,21	Small closed vessel with everted rim and handle	Sandy clay, limestone and mica	Wet smoothed 2.5Y5/1	Wet smoothed 2.5Y5/1	Handmade (?); well fired
22	21,22	Small closed vessel with everted rim and handle	Grit, sand, limestone and mica	Wet smoothed, polished and burnished 2.5Y5/1	Wet smoothed, polished and burnished 2.5Y5/1	Wheel-made; well fired
23	22,23	Small closed vessel with everted rim and handle	Sand, limestone and mica	Wet smoothed 2.5Y4/1	Wet smoothed 2.5Y4/1	Wheel-made; well fired
24	22,24	Small closed vessel with everted rim and handle	Red grit, sandy clay and mica	Wet smoothed 2.5Y6/6	Wet smoothed 2.5Y6/4	Wheel-made (?); well fired
25	22,25	Small closed vessel with everted rim and handle	Sandy clay, limestone and mica	Polished 2.5Y2.5/1	Polished and burnished 2.5Y2.5/1	Wheel-made; well fired
26	11,26; 22,26	Open bowl with handle and uncovered spout	Red and black grit, limestone and mica	Without slip 10YR7/3	Without slip 10YR7/3	Handmade; rather soft
27	23,27	Closed vessel / jar with vertical rim	Grit and sand	Dark gray 2.5Y5/1	Burnished 2.5Y6/1	Handmade; well fired
28	23,28	Vessel / jar with open rim	Sandy clay, limestone and mica	Wet smoothed 2.5Y6/1 (light gray)	Wet smoothed and polished 2.5Y6/1 (light gray)	Handmade; well fired
29	23,29	Closed vessel / jar with vertical rim and handle	Red and black grit, limestone and sand	No slip 10R6/8	Polished 10R7/8 (light red)	Wheel-made (?); well fired

<sup>1</sup> Color was determined according to Munsell Color Chart

No.	Fig.	Description	Clay and temper	Inner surface treatment and color <sup>3</sup>	Outer surface treatment and color <sup>3</sup>	Vessel mounting method; hardness
30	23,30	Closed vessel / jar with everted rim	Sandy clay, limestone and mica	Wet smoothed 10YR7/1	Wet smoothed 10YR8/3	Wheel-made; well fired
31	23,31	Vessel / jar with everted rim	Sandy clay and limestone	Wet smoothed 2.5Y5/1	Wet smoothed and burnished 2.5Y6/1	Handmade; well fired
32	14,32; 23,32	Small jar with dark red, painted, geometric decoration	Black grit, sandy clay and mica	No slip 7.5YR7/4	Polished 7.5YR7/4	Wheel-made; well fired
33	24,33	Open bowl with raised flat base	Black grit, sand and limestone	Wet smoothed 2.5Y4/1 (gray)	Wet smoothed 2.5Y4/1 (gray)	Handmade (?); rather soft
34	24,34	Open bowl with flat base	Red and black grit, limestone and sand	Wet smoothed 10YR7/3 (light buff)	Wet smoothed 10YR7/3 (light buff)	Handmade; rather soft
35	24,35	Open bowl with flat base	Red and black grit and sand	Red slip with salt sediment 7.5R4/6	Red slip with salt sediment 7.5R4/6	Handmade (?); well fired
36	24,36	Open bowl with ring base	Sandy clay and mica	Wet smoothed 2.5Y6/1	Wet smoothed 2.5Y6/1	Wheel-made; well fired
37	24,37	Open bowl with slightly concave base	Black grit, sand and limestone	Wet smoothed	Wet smoothed	Wheel-made; rather soft
38	24,38	Open bowl with flat base	Grit and sand	Wet smoothed and polished	Wet smoothed	Handmade; well fired
39	24,39	Open bowl with flat base	Black grit, sand and limestone	Wet smoothed 10YR4/1	Wet smoothed and burnished 2.5Y4/1	Handmade; rather soft
40	24,40	Open bowl with flat base	Grit, sand and limestone	Wet smoothed 2.5Y4/1	Wet smoothed and polished 2.5Y3/1	Handmade; badly fired and rather soft
41	24,41	Open bowl with roundish base	Red and black grit, sandy clay and mica	Wet smoothed 7.5R5/6 (red)	Wet smoothed and polished 7.5R5/6 (red)	Handmade; rather soft
42	24,42	Open bowl with flat base	Grit, sand, limestone and mica	Wet smoothed GLEY 1-2.5/N	Wet smoothed and polished GLEY 1-2.5/N	Handmade; rather soft
43	25,43	Open bowl with flat base	Black grit and sand	Wet smoothed (light red)	Wet smoothed (light red)	Handmade; well fired
44	25,44	Open bowl with vertical walls / rim and flat base	Grit, sand and limestone	Wet smoothed	Wet smoothed	Handmade; rather soft
45	25,45	Open bowl with flat base	Sand and limestone	Wet smoothed	Wet smoothed and burnished	Handmade; well fired
46	25,46	Open bowl with flat base	Grit, sand, limestone and mica	Wet smoothed 2.5Y4/1	Wet smoothed 2.5Y5/1	Handmade; well fired

<sup>3</sup> Color was determined according to Munsell Color Chart

No.	Fig.	Description	Clay and temper	Inner surface treatment and color <sup>1</sup>	Outer surface treatment and color <sup>1</sup>	Vessel mounting method; hardness
47	25,47	Open bowl with uneven, concave base	Grit, sand, limestone and mica	Wet smoothed 2.5Y4/1	Wet smoothed 2.5Y4/1	Handmade; rather soft
48	25,48	Open bowl with flat base	Grit, sand, limestone and mica	Wet smoothed 2.5Y5/1	Wet smoothed 2.5Y5/1	Handmade (?); well fired
49	25,49	Open bowl with flat base and small decorative handle	Sand and mica	Wet smoothed and polished 2.5Y6/1	Wet smoothed and polished 2.5Y7/1	Handmade; rather soft
50	26,50	Open bowl with flat base	Grit, sand and limestone	Without slip 2.5Y4/1	Wet smoothed 2.5Y6/1	Handmade; rather soft
51	26,51	Open bowl with uneven base and small decorative knobs	Sand, limestone and mica	Wet smoothed 2.5Y4/1	Wet smoothed 2.5Y5/1	Handmade; rather soft
52	7,52; 26,52	Open bowl with flat base and small decorative knobs	Limestone and mica	Wet smoothed 2.5Y4/1	Wet smoothed, polished and burnished 2.5Y5/1	Handmade; well fired
53	9,53; 26,53	Dish (flat bowl) with rounded and slightly concave base	Black and white grit and sand	Wet smoothed 10R5/6	Wet smoothed 10R5/6 polished on surface of base 10R5/8	Handmade; well fired
54	26,54	Dish (flat bowl) with flat base and remains of three legs	Sandy clay and mica	Wet smoothed and polished 2.5Y6/1	Wet smoothed and polished 2.5Y6/1	Handmade; well fired
55	10,55; 26,55	Dish (flat bowl) with flat base and three legs	Grit, limestone and mica	Wet smoothed 2.5Y5/1	Wet smoothed 2.5Y5/1	Handmade; rather soft
56	8,56; 27,56	Beaker with handle	Grit, sand, limestone and mica	Wet smoothed, polished and burnished 2.5Y3/1	Wet smoothed, polished and burnished 2.5Y3/1	Wheel-made; well fired
57	8,57; 27,57	Beaker with fragmentary handle	Grit, sand and mica	Wet smoothed 2.5Y6/1 (light gray)	Wet smoothed 2.5Y6/1 (light gray)	Handmade; well fired
58	27,58	Beaker with handle	Grit, sand and limestone	Wet smoothed 2.5YR4/1	Wet smoothed, polished and burnished 2.5Y3/1	Wheel-made; rather soft
59	12,59; 27,59	Spouted jar	Sand and mica	Wet smoothed 7.5YR4/1	Wet smoothed, polished and burnished 7.5YR4/1	Wheel-made; rather soft
60	13,60; 28,60	Small perfume flask with incised geometric motif	Sandy clay, limestone and mica	No slip 10YR5/1	Wet smoothed 10YR5/1	Handmade; rather soft
61	13,61; 28,61	Small perfume flask with incised geometric motif	Sandy clay and mica	No slip 10YR4/1	Wet smoothed 10YR4/1	Handmade; well fired

<sup>1</sup> Color was determined according to Munsell Color Chart

No.	Fig.	Description	Clay and temper	Inner surface treatment and color <sup>1</sup>	Outer surface treatment and color <sup>1</sup>	Vessel mounting method; hardness
<b>Metal objects</b>						
62	16,62; 29,62	Blade with tang	bronze	cast	Surface covered with light green corrosion	Edges severely damaged
63	16,63; 29,63	Leaf-shaped blade with tang	bronze	cast	Surface covered with light green corrosion	
64	17,64; 29,64	Pin with geometric decoration on the shaft	bronze	cast? hammered?	Bronze surface visible, in places green corrosion	
65	17,65; 29,65	Pin with geometric decoration on the shaft	bronze	cast? hammered?	Bronze surface visible, in places green corrosion; lower half missing	
66	18,66; 29,66	Fragment of a ring	bronze		Surface covered with light green corrosion	Preserved end hammered flat into lanceolate shape
67	18,67; 29,67	Fragment of a ring	bronze		Surface covered with light green corrosion	Preserved end hammered flat into lanceolate shape
68	18,68; 29,68	Disc with open-work decoration	bronze			
69	18,69; 29,69	Open armring with blunt ends	bronze	massive, cast		
70	19,70; 29,70	Sickle blade with curved tang	bronze			
71	17,71	Fragment of a sickle blade	?	?	Surface severely corroded	
72	16,72	Fragment of lead bar	lead	cast	?	

<sup>1</sup> Color was determined according to Munsell Color Chart

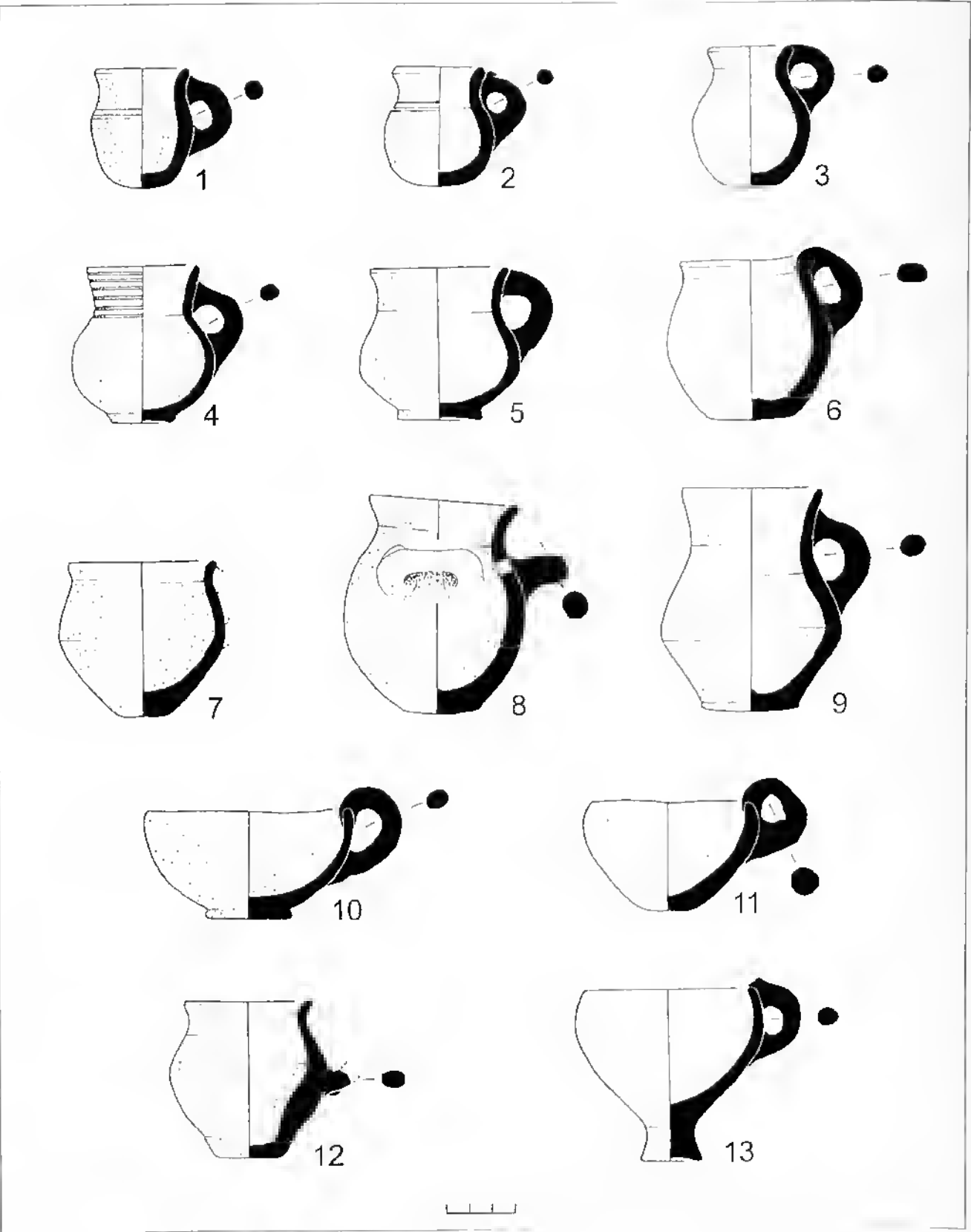


Fig. 20 Miläjerd 4. 1–6 small closed vessels with handle/juglet; 7, 12 jars; 8 juglet with tubular spout; 9 beaker; 10–11 cups with handle; 13 stemmed cup with handle

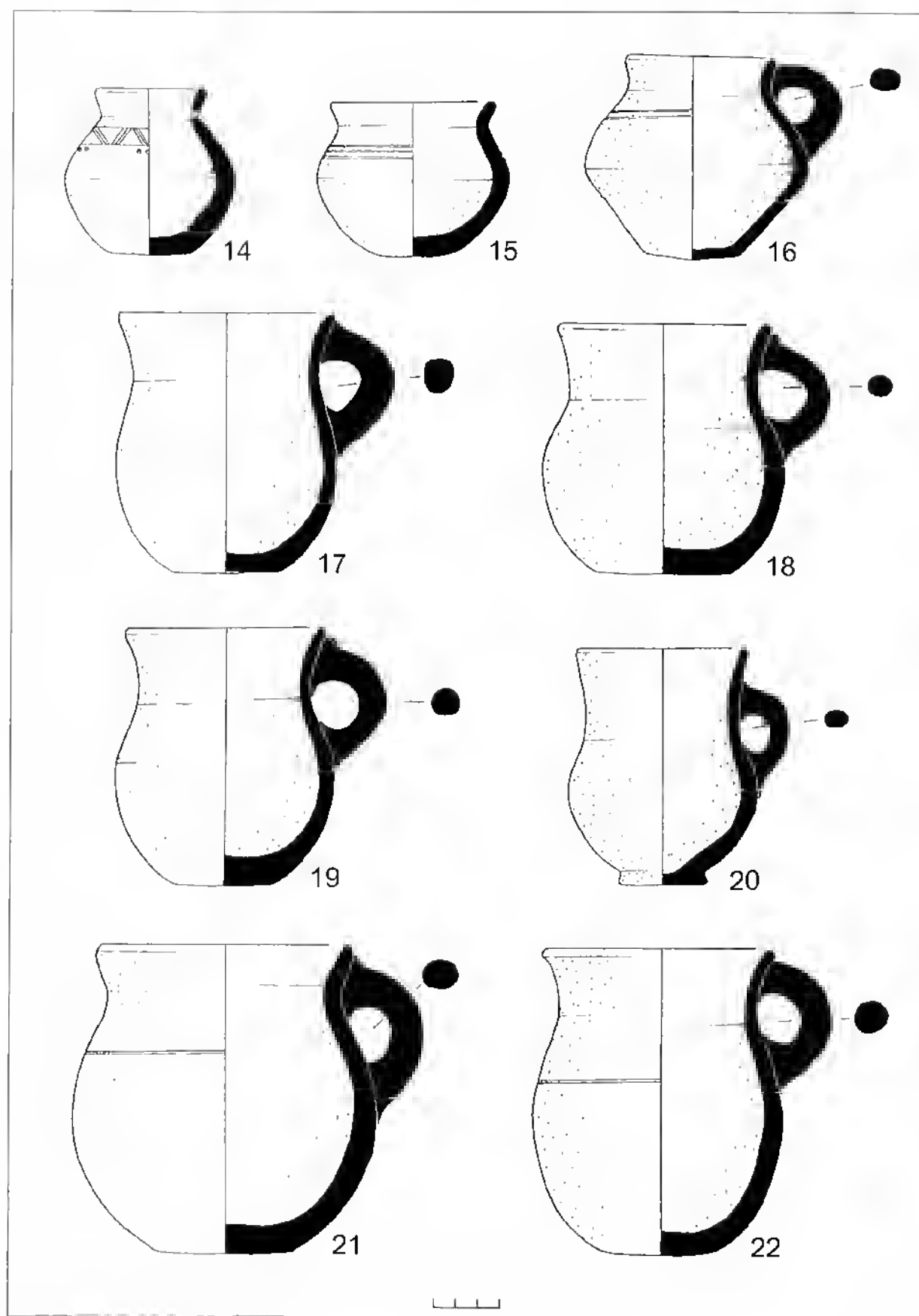


Fig. 21 Milājerd 4. 14–15 jars; 16–22 juglets

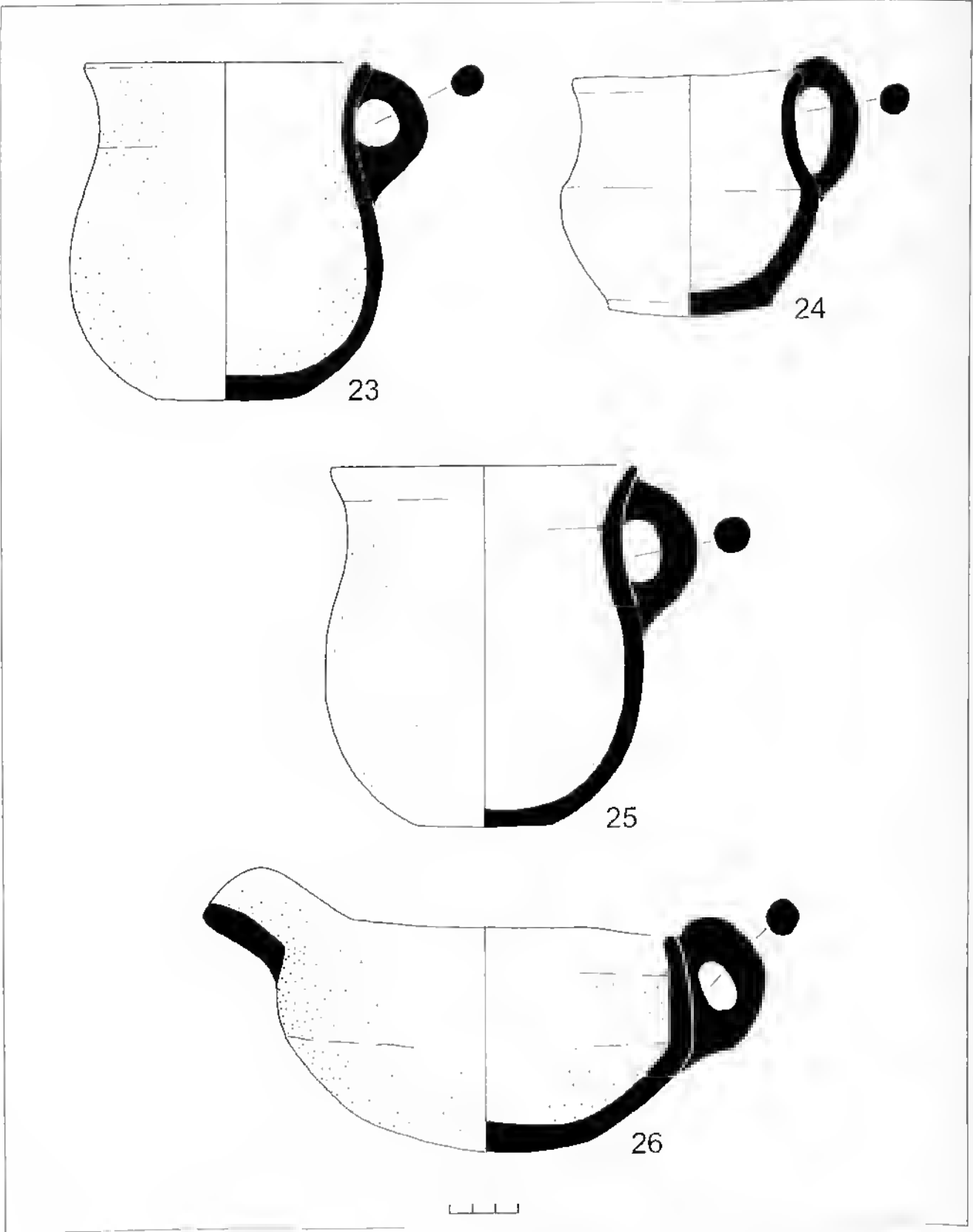


Fig. 22 Milájerd 4. 23–25 small closed vessels with handle; 26 spouted vessel with handle

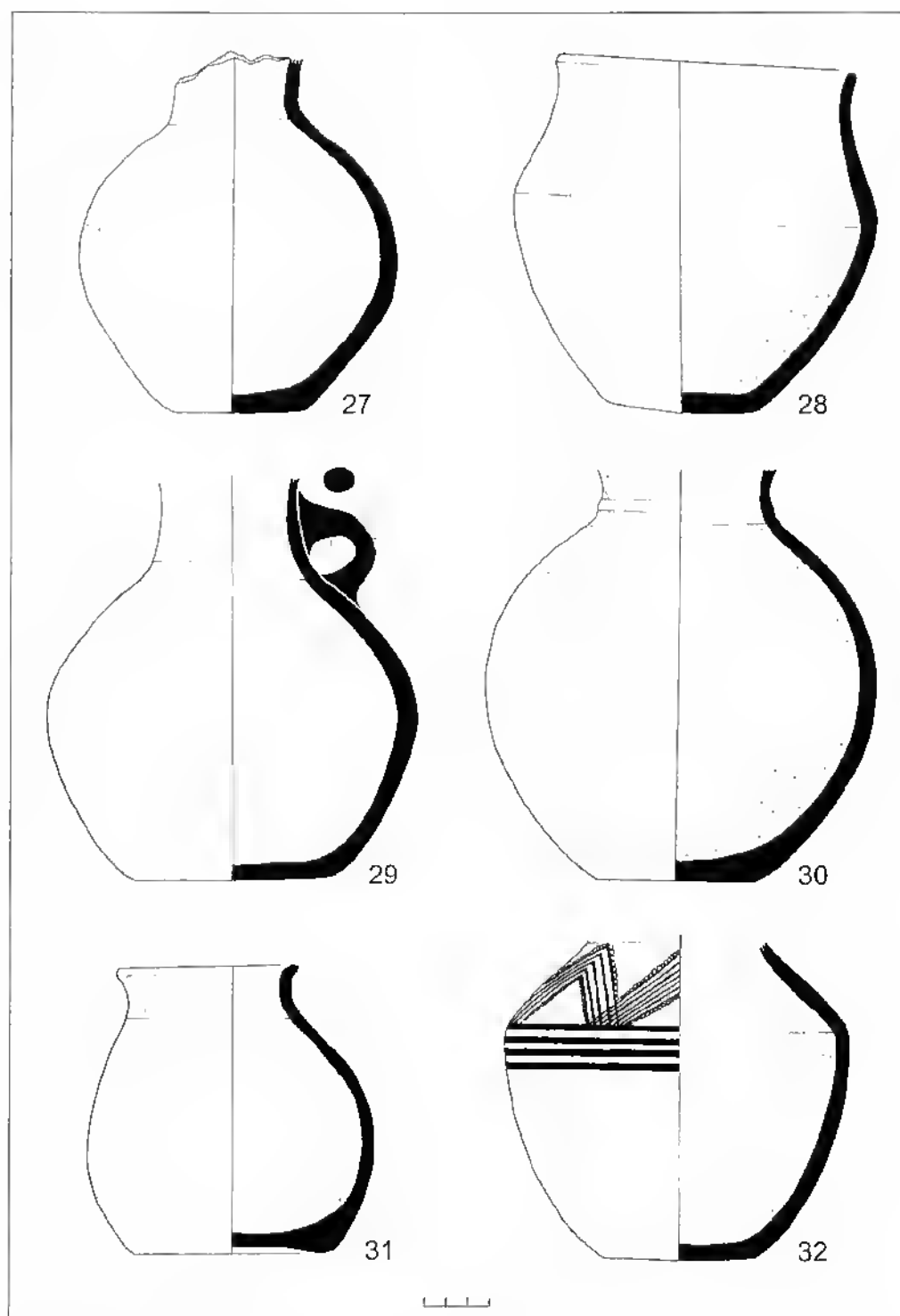


Fig. 23 Milājerd 4. 27-31 jars; 32 jar with palmette geometric decoration



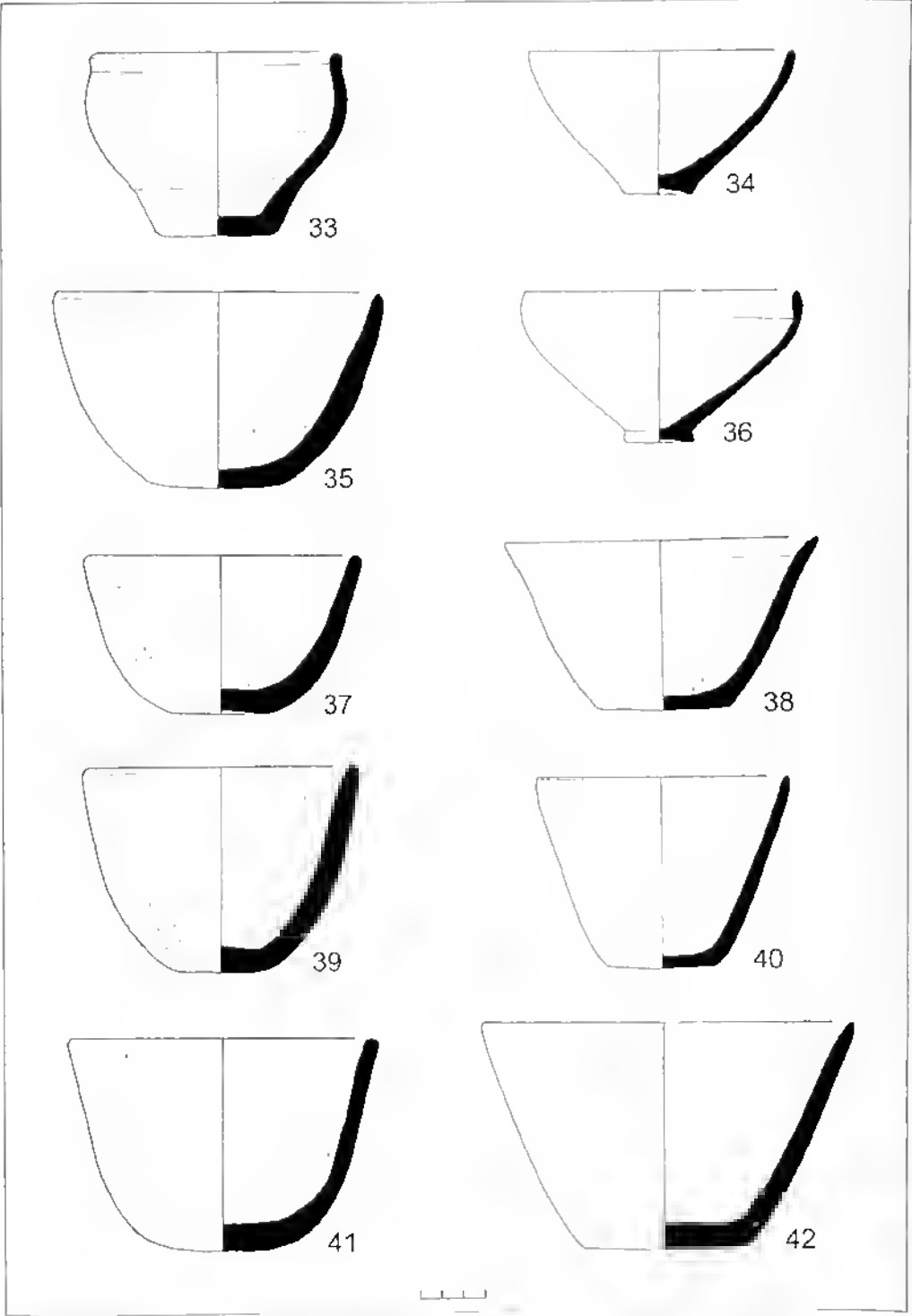


Fig. 24 Milâjerd 4. 33-42 open bowls

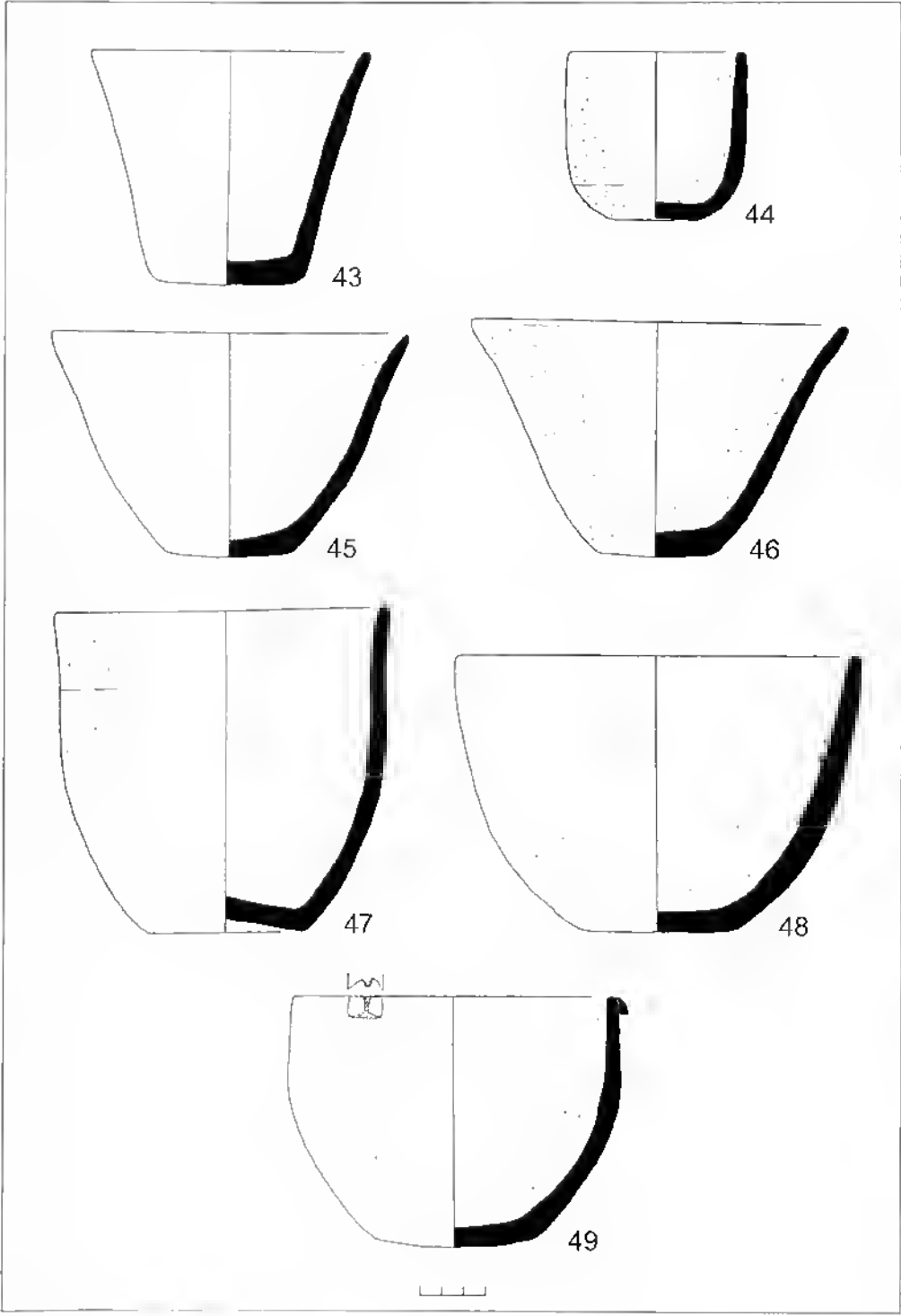


Fig. 25 Milājerd 4. 43–49 open bowls

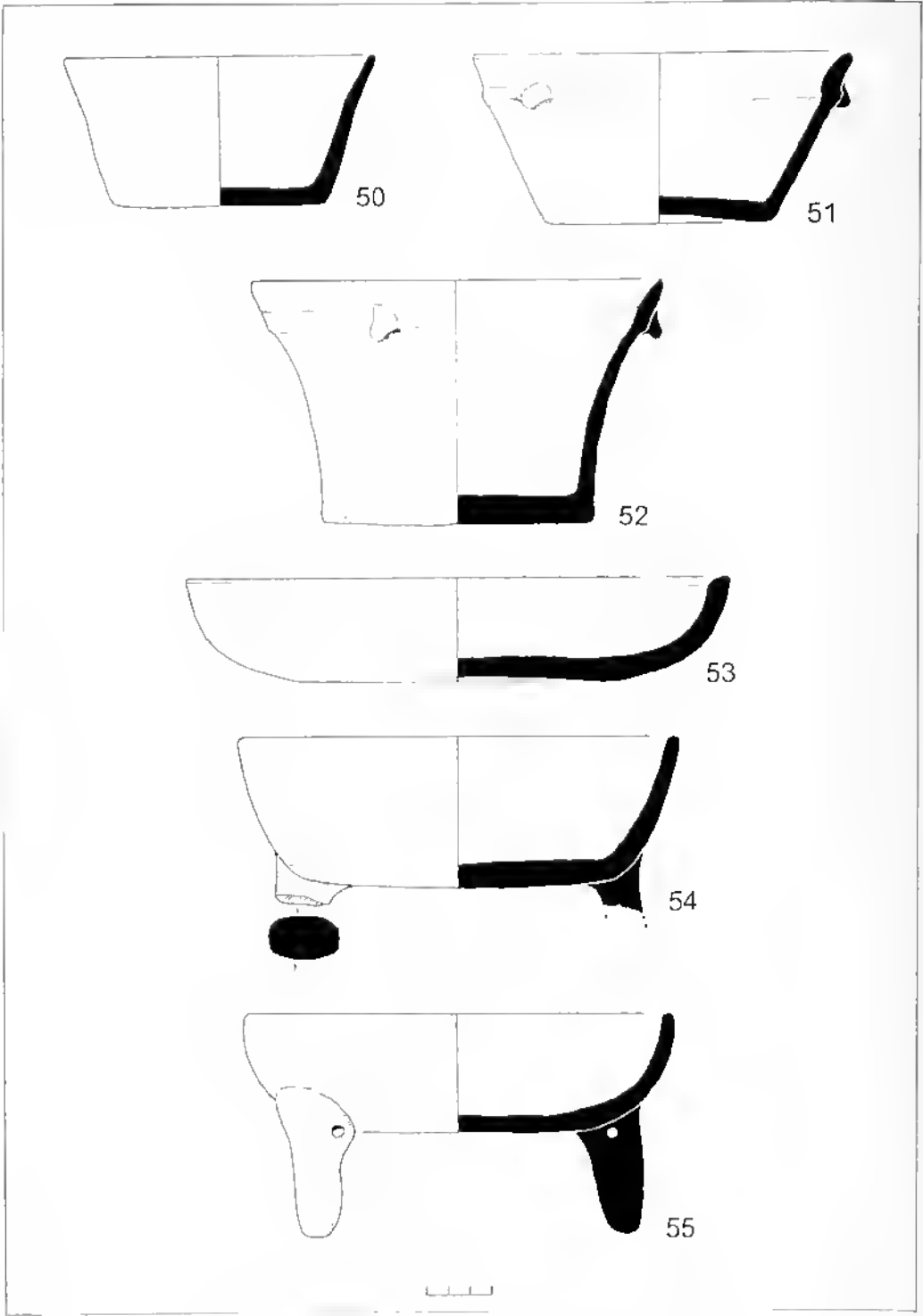


Fig. 26 Milājeid 4. 50–52 open bowls; 53–54 dish/bowl; 55 Ilāl dish/bowl with three legs

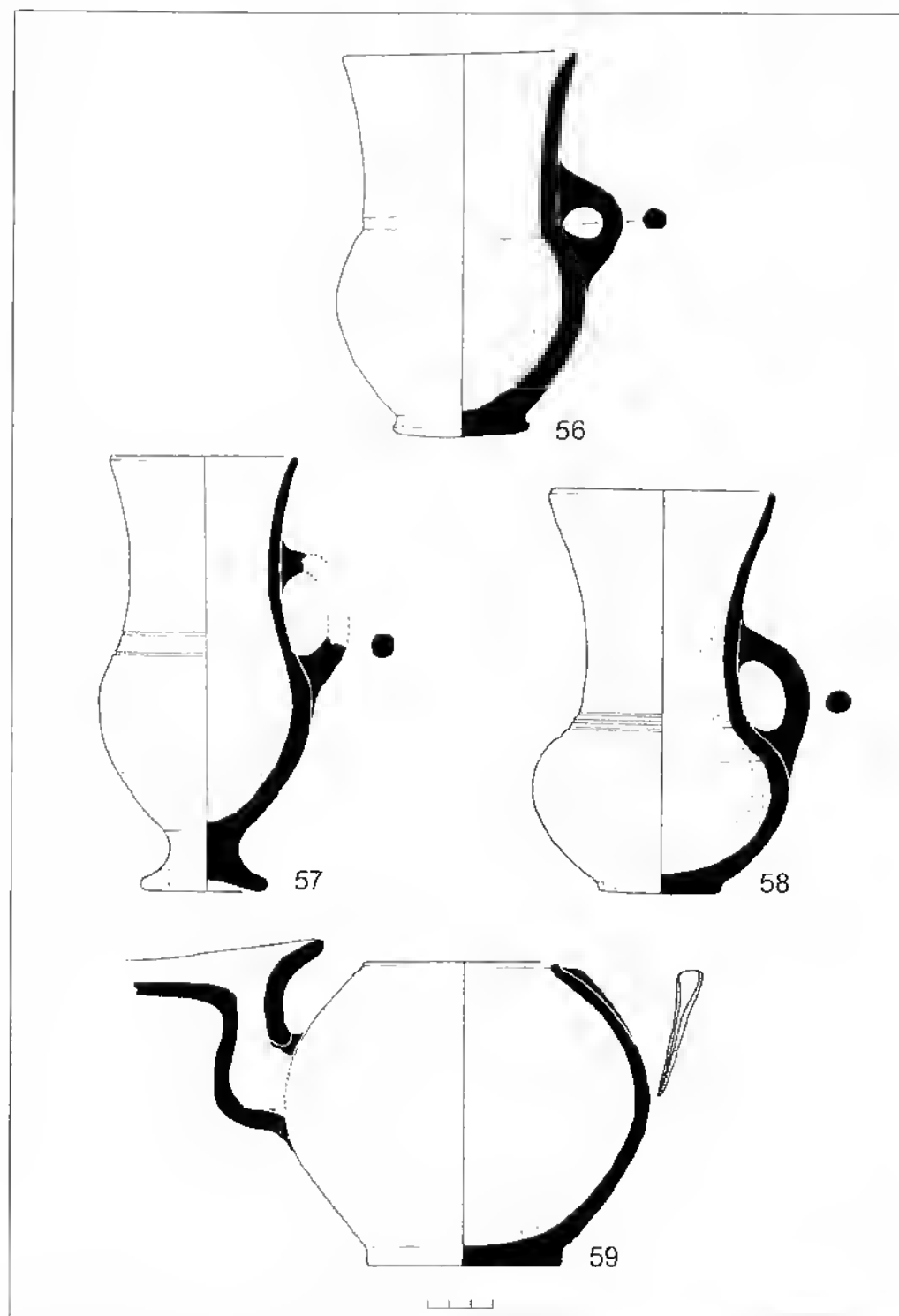


Fig. 27 Milājerd 4, 56–58 tall beakers; 59 spouted vessel